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# DISEASES

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## Editorial Comment

**AN APPRAISAL** IN a recent letter to the membership of the American College of Chest Physicians, this statement appeared: "The Editorial Board will be pleased to have your comments on our Journal, *Diseases of the Chest*; also any suggestions for improving the Journal. The answers to this request were very complimentary and encouraging.

The following are a few of the hundreds of comments sent in: "An Excellent Journal"; "Good"; "Highly satisfactory"; "Shows progressive improvement"; I feel the editorial staff is to be complimented on getting out such a publication"; "Enjoy reading it very much, and believe it is answering many questions, especially for the general man in medicine"; "I heartily agree with your policy"; "Very interesting"; "I believe it fills a long-delayed, and much felt need for the use of the family physician"; "Believe the Journal is doing a good job, and is truly pioneering in the field that has been woefully neglected in the past."

There were very few suggestions; however, those that were made will be given thoughtful consideration.

C. M. H.

**NO REST FOR THE WEARY** MOST physicians know so little about the actual conditions in their public tuberculosis sanatoria that they believe there is no work for them to do through organized

medicine (their local, County and State Medical Societies). Let us consider the matter of bed rest. Isn't it your opinion, Doctor, that when you send a patient to the Tuberculosis Sanatorium, there is rest, rest, rest? Then read from these actual patients' letters:

"Dear Doctor.....

"This is to thank you for your defense of the patients in the State Sanatoria. I spent 18 months at .... San. and I know everything you say is true. In my opinion the awful part of the situation is that patients entering the sanatorium trust the doctors in charge to take care of them. Those doctors know that rest is the only thing that will make them well and yet at .... San the rule is that unless one has a temperature of 100 degrees or over you are not allowed in bed.

"As for the patient - employee situation, there is not an able-bodied worker in the place, except perhaps in the boiler room. When I wanted my mattress turned or a heavy chair carried and had the silly idea that that's what the orderly was for, he told me that he was sick and to do it myself. The nurses were all sick, too. Patients make their own beds, scrub bathtubs, polish brass, clean dental bowls and wash bowls, tote blankets up and down stairs when they go out for their "cure" periods, go to the nurses' office for their medicine and wash the medi-

cine glass out after taking it.

"To every 2 wards of 40 patients, there are "quiet rooms" accomodating 10 patients; 5 rooms, 2 patients to a room. These 10 get bed rest. The draw-back is that you have to be unable to stand up any more to get one of these beds. When they move you in the quiet room, you die shortly after.

"Dr. . . . . WHY keep sick people on their feet when the beds are standing there idle all day? As I said before, the awful thing is that these sick people trust the doctors. When they enter . . . San and are allowed to run all over the grounds, they go ahead and run and think it's grand that the doctor sees fit to let them. I've seen so many people come up there in pretty good condition and run themselves into the grave under the doctors' noses.

"You can't know how grateful I am to you for taking our part against this insane "system." Thank you, and may God bless you for speaking out.

"Sincerely,

*Another Letter . . . .*

"The patient's day is arranged as follows: arise at 6 a. m., remove the bed clothes from the bed, throw the mattress up over the back of the bed, wash and dress, and then walk half way through the Institution, almost a city block from most points in the wards, for breakfast as well as for all other meals. After breakfast temperature and pulse are taken, and charted. It is then about 7:30 a. m. and beds are made, each patient making his own. After that a patient, designated as the Ward Boss, gives the patients some work to do, called exercise. This may be sweeping the ward, polishing brass, mopping floors, washing windows, cleaning wash bowls, or bath tubs and room, washing beds or furniture or some such work.

"I was assigned to sweeping out the large dressing room and on Mondays I oiled from top to bottom all sides of a shower bath and an adjoining dressing stall. In addition to this, every so often, I assisted with putting the beds in a line. Many of these beds contained patients and were not easily moved by a weak light-weight.

"Each patient usually has his work done by

the time the doctor arrives, at 9 a. m., when all line up and report to him personally. After this inspection, patients go to the nurses' office for any treatment or medication; if they desire, they are supplied with milk by going to the diet kitchen for it, or they can shave or primp until 9:30 a. m. at which time all bed patients must and are in bed and all exercise patients must go out in the air.

"The women patients have an outside solarium on their side of the Institution but the men have none. Regardless of how cold a day it may be, the men patients who are up and out on exercise are supposed to be outside. However, during the coldest days, they can all be found tucked away in the basement of the building. The reason for this is self-preservation and protection from the cold. Nobody in their right mind would expect a T. B. patient to combat some of these extremely cold days. There is no adequate solarium on the west side to protect the men patients.

"At 11:30 a. m. exercise patients must be back inside and prepare for dinner. After dinner is served, all patients must be in bed from 1 to 2:30 p. m. Most of them are already in bed at 12:30. At 2:30 p. m. all patients are awakened. At 3 p. m. all exercise patients must be dressed again and out in the air. Bed patients remain in bed. At 4:30 p. m. exercise, as well as bed patients, prepare for supper. After supper, temperature and pulse are again taken and recorded.

"In the summer time, exercise patients may again go out in the air after supper for an hour or so. In the winter, all stay in after supper and at all times, patients must be in bed at 9 p. m., when the lights are turned out.

"This daily routine, together with various kinds of medications, mending clothes, bathing, writing letters, etc., keep the patients on their toes most of the time between 6 a. m. and 9 p. m., and it has been estimated that in doing the least amount of walking, the exercise patient walks about a mile a day. Exercise patients, not feeling any too good, often wonder when they will get some rest."

"Sincerely,

Some years ago, the Editor upon taking over a service in a Tuberculosis Hospital, found that from the time of the starting of the institution many years before, it had been the custom for the night nurse to turn on the lights in the wards at 4 a. m., winter and summer, and supply each patient with basin and towel, give baths, etc. The patients stated that there was no sleep in the wards after 4 a. m. The matter was promptly taken up and a change made to 8 a. m. Those four hours of increased sleep caused many to start to improve who were at a standstill or slipping.

Now another letter:

"Dear Doctor.....

"In regards to your charges pertaining to conditions in State Sanatoria, I was at the State Sanatorium at .... for 14 months and can and do truthfully agree with your charges and hope that some good comes of your efforts.

"There was only 1 doctor to treat more than 120 patients. A patient gets a chest examination by the doctor when he or she is admitted to the sanatorium. Thereafter, the patient is examined every 3 months. As for nurses, a bed patient gets practically no services from her (other than being given a tray 3 times a day). You can readily understand this when I tell you there is 1 registered nurse and 1 or 2 student (sanatorium) nurses for 60 patients, about 25 of which are bed patients; 10 are quiet room (bed fast) patients, the remaining 15 being "exercise" and "solarium and dining room" patients. "Bed patients" make their own beds and get their own medicine. Nurses make the beds of the "quiet room patients" only.

"I was a "Bed patient" (except for a few weeks) the duration of my stay. Many times I felt so weak and worn out from having 100° - 101° (sometimes higher) temperature that I really didn't feel able to make my bed but I had to do it.

"What I could never understand was why a patient couldn't stay in bed unless he or she either "ran a temp. of over 100 degrees" or "expectorated bloody sputum." It seems so foolish to me that on a cold, stormy day (or any day for that matter) when rest period was over (1 to 2:30 p. m.) a "sol. and dining

room" or "exercise" patient was compelled to get up, dress, make his or her bed, then go and sit in a damp solarium till supper time (4:30 p. m.). Why, if they so desired, couldn't they stay in bed till supper time, then go to the dining room in pajamas and robe. It seems positively silly all that dressing and undressing when the patients are supposed to be there to rest.

"An "exercise" patient has it worse. She is compelled to go out and sit on an uncomfortable park bench for 2½ hours in the morning and 1½ hours in the afternoon no matter how cold or windy the weather, so long as it is not raining or snowing.

"Also, she has her "exercise" every day which consists of scouring dental bowls or wash bowls, cleaning toilets or scouring bath tubs. The day after a patient is put on "exercise," she is given one of the above stated "exercises" to be done each and every day.

"I sincerely hope that you accomplish some good with your charges.

"Sincerely,

”

These are only typical letters from among very many. They come from patients who have been in State Tuberculosis Sanatoriums. The letters are on file in the Editor's office.

We do not believe patients should be awakened before 8 a. m., nor be compelled to work or exercise.

We STILL believe the two greatest functions of a sanatorium are:

First: Remove the infectious tuberculous patient from the non-infected,

Second: Cure the tuberculous patient by means of rest of the body, mind, and lung.

So—it is earnestly urged that you have the TUBERCULOSIS COMMITTEE of your Medical Society look into the AMOUNT OF REST afforded the tuberculosis patients in your public tuberculosis sanatoriums. In too many places you will find cruel schedules handed down from the DARK AGES OF TUBERCULOSIS TREATMENT. If you do not have a TUBERCULOSIS COMMITTEE in your MEDICAL SOCIETY, we beg you to see that one is formed. ORGANIZED MEDICINE ALONE occupies the proper position to unselfishly guide these matters.

F. W. B.

## An Appeal for Conservatism in Phrenic Nerve Surgery

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SINCE Stuertz recommended interruption of the phrenic nerve for the treatment of pulmonary tuberculosis in 1911, there has been a great deal of discussion among phthisiologists, pro and con, as to the merits of the procedure. Opinions vary from those who have recommended phrenic nerve interruption in all cases wherein pneumothorax has been unsuccessful to those who have practically discarded the procedure because of the lack of success on too frequent occasions and the apparent unpredictability of results when the hemidiaphragm is paralyzed. Everyone doing phrenic nerve surgery will no doubt recall results nothing short of remarkable in some cases, while in others, utter failure to obtain the desired end has been the reward of the effort and good intent of the surgeon. He may find that numerous small cavities have coalesced to form a large one or the cavity already present has enlarged under insufficient relaxation obtained by the rise of the hemidiaphragm. This seeming inability to forecast the results of the procedure accounts for this variance of opinion. However, here as in many instances a middle course is probably the wisest one since in its place, phrenic nerve surgery is a valuable weapon in phthisiotherapy.

It is well, perhaps, not to expect too much of an apparently simple procedure. It would seem in the opinion of many experienced men that gratifying results will not be obtained when there are present (1) enormous cavities; (2) moderate sized cavities which are sub-pleural; (3) cavities situated among the large branches of the bronchi; (4) cavities with heavy walls (Type 3) or (5) those with a great deal of infiltration about them.

It should be quite obvious why enormous cavities cannot be closed by the amount of relaxation diaphragmatic paralysis will give. Paralysis of the diaphragm does not exert particular pressure, except where increased intra-abdominal pressures exist from causes discussed later. Subpleural cavities cannot

contract away from the chest wall, therefore they will not close from relaxation alone. The notorious difficulty in closing Type 3 cavities will explain why the simple relaxation acquired in the procedure will rarely close them. Cavities among large branches may resist closure to almost any procedure. Where marked infiltration or excessive pulmonary fibrosis exists about a cavity (especially in an old process), or a markedly thickened pleura with accompanying pleural adhesions following empyema occurs, so little elasticity may remain in the intrathoracic structures that it is impossible for them to contract even though the pull of the diaphragm has ceased.

On the other hand, we may expect better results when diaphragmatic paralysis is done under a lung (1) which is contracting; (2) which has contracted as far as it can; (3) containing cavities moderate in size, not sub-pleural; (4) where cavities show a tendency to close; (5) presenting disseminated fibro-exudative lesions especially in the lower two-thirds. It is also useful (6) to diminish the intra-thoracic capacity following pneumothorax where too great or too rapid reexpansion might enhance the reopening of a former large cavity, as an adjunct to (7) pneumoperitoneum and to (8) pneumothorax when apical (or upper chest) adhesions not amenable to cutting exist and prevent a cavity from closing, (the lung being firmly attached to the diaphragm)—the relaxation acquired will often allow such a cavity to close.

In explanation of the indications it can be said that since diaphragmatic paralysis gives marked relaxation in the lung above, it can be seen that a lung contracting or that has contracted as far as it can while healing will receive a new impetus in the process of this contraction.

As many cavities are actually held open by the pull of the thoracic walls via the intervening elastic tissue of the lung, it can

be seen that relaxing the whole tension of the lung by diaphragmatic paralysis such cavities will tend to close due to the inherent elasticity of the organ. There is some discussion and difference of opinion as to whether the procedure in question is more efficacious in closing cavities in the lower or middle portion of the lung, however apical cavities that are not subpleural are commonly known to close after a successful rise of the diaphragm is accomplished.

If a paralyzed diaphragm will assist in healing a fibro-exudative process, even though it does not close an apical cavity if present, the phrenic nerve interruption has been of value since apical surgery can be performed to take care of the cavity.

It is interesting to note that when a patient gains weight sufficiently to enlarge the abdomen the increased intra-abdominal pressure resulting will elevate the hemidiaphragm further than it would otherwise rise. The same is true in pregnancy and in pneumoperitoneum.

A discussion of phrenic surgery in non-tuberculous processes is not within the scope of this paper.

Remembering the above facts and factors, we can now consider phrenic nerve interruption as an adjunct to the treatment of the particular case the surgeon may have in mind. However, in the treatment of pulmonary tuberculosis, two pertinent questions arise to confront the surgeon; first, what is the best procedure (or sequence of many procedures) that will insure the successful closure of cavities and the healing of the tuberculous process and; second, the first being accomplished, what manner of individual now exists even though his tuberculosis is arrested? Have we made him unduly dyspneic by unwise or unduly radical procedures?

*It must be remembered that when the diaphragm is attacked by phrenic nerve interruption, we stay the mechanical action of one of the most important factors in the extrinsic respiratory mechanism. In collapse therapy the amount of vital capacity reduced is not always as important as is the manner and location in which this reduction is accomplished. For example, let us picture two individuals who have had moderate apical cavitation. Bilateral apical thoracoplasty or*

plomage has been done on one; bilateral permanent diaphragmatic paralysis on the other.

Assuming that the amount of reduction of vital capacity is the same in each, none will deny that the former has a good chance of being a fairly comfortable person, up and about, while the latter will be a permanent respiratory cripple even to the extent of being uncomfortable in bed. The writer saw such an incident in which permanent bilateral phrenic nerve interruption had been done for bilateral apical cavitation only moderate in amount, with little or no effect on the pathological process. The patient was bed-ridden due to dyspnea. Naturally further attack by apical surgery was impossible. Phrenic nerve crushing would have given an entirely different outlook for both the surgeon and the patient.

Keeping the above illustration in mind, it can be assumed that we commit the same error unilaterally whenever the phrenic nerve is permanently disabled and our results prove unsuccessful. Insofar as the results of phrenic nerve paralysis are sometimes unpredictable although the indications seem clear, how can we feel justified in reducing the efficiency of the respiratory apparatus permanently at first sitting? Should there be a case in which it seems obvious that a paralysis of the hemidiaphragm will be of benefit to disseminated exudative lesions existing below an upper chest cavity, it would seem logical to interrupt the nerve temporarily twice or even three times if necessary and in the end have a functioning diaphragm under the healed useful lower portion of the lung. If the cavity has not then been closed, upper chest thoracoplasty or plomage can be done to accomplish the closure and the patient will have a functioning diaphragm to add to his efficiency. This procedure is especially logical since the successful closure of upper chest lesions by upper chest surgery is coming more and more into prominence and deservedly so.

A similar problem presents itself when the hemidiaphragm is paralyzed permanently on one side, when nothing but thoracoplasty will control the lesions on the opposite.

A cavity situated in the cardiohepatic angle may be prevented from closing because of the interposition of the dome of the liver (which has risen high up into the chest cavity fol-

lowing diaphragmatic paralysis) between the cavity and the thoracic wall from which the ribs have been resected by throacoplasty. If phrenic nerve interruption has been temporary the liver will descend after nerve regeneration has taken place and tonus has returned to the diaphragm. The liver out of the way, the chest wall can now collapse allowing the cavity to close. It might be well, in such cases to delay the time of the lower stage of thoracoplasty until phrenic nerve regeneration has been accomplished, and descent of the liver assured.

Aside from crippling the respiratory mechanism, there are, in phrenic nerve interruption definite side effects encountered which may arise to add to the discomfiture of the patient. Distressing abdominal symptoms, interference with the function of the esophagus, otherwise unaccounted for tachycardia, palpitation, dyspnea, and pain in the chest have been noted. These symptoms are probably due to interference with vegetative nervous system sensory fibers coursing through the phrenic nerve, there being a close association of the phrenic ganglion with the coeliac ganglion and this in turn (through the phrenic nerve) with the cervical plexus. As many of the symptoms following phrenic nerve surgery disappear following regeneration of the nerve, we would hardly seem justified in destroying the nerve at first sitting, only to regret that we cannot retract our deed.

Another factor which can enter into our problem is the importance of the diaphragm in producing the normal negative intrathoracic pressures which assist in the return flow of blood to the heart via the great veins. Thus, interference in the production of these negative pressures add to the load on the right heart. Where the myocardium is damaged this additional load might be enough to overbalance that which a right heart might otherwise safely assume.

Phrenic nerve surgery is not the simple, harmless procedure that some would apparently believe, since Berry has established in 1930 a mortality rate of one-half of one per cent in a review of nearly 5000 cases. Not a few of the deaths have been due to hemorrhage following exeresis.

Considering the discussion so far, it does not seem that we are justified in interrupting

the phrenic nerve permanently until we have earned the right to do so by executing a temporary procedure first and observing the results obtained. If these results are all that can be desired, and no undesirable side effects noted, it is a simple matter to obtain permanent interruption by resecting a centimeter of the main trunk which has regenerated. If an ultimately movable diaphragm is considered essential, phraxis can again be done.

However, objections have been raised to phrenic nerve phraxis or severing and suture because of the frequent failure to obtain complete paralysis of the diaphragm when these operations are done. These failures of course are the result of unsevered branches which arise from the cervical plexus to join the main branch of the nerve. The search for these accessory or "neben" branches complicates the operation, but the time and effort thus expended may often pay the surgeon good dividends in the end. It is the writer's opinion that the above objection can be obviated by stimulating the nerve trunks and branches during operation with an electric current derived from a generator such as is used in physiology classes in the study of nerve reactions. (A suitable electrode can be made with two fine knitting needles placed parallel about an eighth of an inch apart and molded into a handle of dental vulcanite, shaped to the desire of the operator, and after being vulcanized the whole is boilable.)

The procedure is accomplished by attaining the fascia of the anterior scalenus muscle in the usual manner and isolating the main branch of the nerve which is stimulated for identification. If the phrenic nerve is stimulated, the diaphragm will forcefully contract which action can be felt by the patient as a hiccup and by the surgeon as an impulse in the upper abdomen on the operated side.

Following the fascial plane laterally, the trunks of the fourth, fifth or (occasionally) sixth cervical nerves are carefully approached and stimulated, especially observing the fifth, which so often gives rise to a branch either to the main trunk, or may exist as a separate nerve, the latter occasion being, of course, uncommon. When this is

done, the arm will jerk, but if there be an accompanying branch, the diaphragm will also react. The signal thus being given that there is a branch to the phrenic nerve in the main trunk of the fifth (or other trunk) it is to be inspected, the neben branch found and stimulated on its own isolated substance. There should now be a contraction of the diaphragm, but little or none of the muscles of the arm.

The branch may run within the sheath of the larger nerve (again especially true of the fifth cervical) for some distance and can be seen as a ridge upon the main nerve. It can be easily isolated and removed from the sheath of the larger trunk. The branch can now be identified as above and disposed of as is seen fit. If it is small, it is probably as well to resect a segment of it, as sufficient diaphragmatic contraction will be given by the main trunk on regeneration, and this procedure obviates the necessity of search for the elusive branch at reoperation. If large, it can be treated as the main trunk, (described below) and crushed at reoperation. Any small nerve branches running diagonally across or parallel to the anterior scalenus muscle should be stimulated and identified in the same manner.

The fascial plane is then followed medially, where any nerve running downward (being sure we are not too near the carotid sheath or region of the vagus) can be safely stimulated and if diaphragmatic response occurs, this branch too, can be dealt with. When found, diagonally or medially situated branches usually come from the third cervical. No strand of fascia or tissue resembling nerve trunks are severed or injured in any way unless there is diaphragmatic response to stimulation. A study of the variations of the phrenic nerve so ably described by Matson will clarify the anatomy of the nerve and the philosophy of the above surgical approach. Once the main trunk is isolated and small branches severed, a strand of No. 7 or 9 twisted black silk is tied loosely around the nerve. After leaving the thread sufficiently loose to insure no undue tension, the distal end is embedded in a suture coaptating the fibers of the platysma. This silk thread serves as a guide back to the nerve at reoperation.

After infiltrating with novocaine the nerve

is now crushed carefully in a hemostat from which the serrations have been filed and whose smooth surfaces approximate evenly and accurately (tested with dental articulating paper) because failure of regeneration has been known following phraxis by the ordinary hemostat as histologic severance often takes place due to the serrations acting on each other in a scissor-like manner. The above procedure in the main has been advised by Dr. Thomas Kinsella, associate professor of surgery at the University of Minnesota.

When there is contralateral pneumothorax or other condition in which the diaphragmatic paralysis may cause an undue dyspnea, (which in the mind of the writer defeats the principle of pulmonary rest) a trial nerve interruption can be accomplished by injecting the main trunk (the branches having been disposed of) with one-quarter to one-half of one per cent quinine and urea hydrochloride *at low pressure*, which procedure will bring about a paralysis of from 36 to 72 hours which interval will give the hemidiaphragm time to rise somewhat into the chest. The procedure will present an approximate idea of what can be expected following lengthier paralysis. If no dyspnea is encountered the black silk thread can then be followed back to the phrenic nerve with facility and the latter crushed. If dyspnea results, nothing further is done except to obtain more perfect skin coaptation, if this has not been accomplished. If only restraint of diaphragmatic motion for pulmonary rest is desired, and little or no rise is wished (fearing possible coalescence of multiple small cavities, dyspnea, etc.) the main trunk can be split longitudinally leaving a fraction of the nerve intact, and the remainder crushed. A very small segment will prevent diaphragmatic rise.

In all cases, immediate fluoroscopy is advised before skin closure and usual signs of diaphragmatic paralysis observed, remembering that too free use of novocaine in the region of small nerve trunks or branches will cause temporary blocking of unsevered branches, and their recognition thus made difficult. If there is still movement, the search for branches is recommenced.

In conclusion then, it is well to remember

that in paralyzing the diaphragm, we are attacking one of the main motivating forces of the respiratory mechanism. Judging from the glib manner in which some have advised its permanent paralysis in a hit or miss manner, "to see what will happen," its true importance has apparently not been realized. It is of benefit to make a fluoroscopic study of its action after violent exercise; during singing; talking; coughing; sneezing and again during quiet breathing, and visualize its cardinal importance in every phase of respiration, and respect it accordingly. How often has a thoracic surgeon inherited a patient whose permanently paralyzed hemidiaphragm precludes contralateral thoracoplasty or other surgical procedures because the end result would be a distressingly dyspneic patient!

In phrenic nerve procedures as in all chest surgery an attempt should be made to preserve all the breathing space consistent with efficient and sufficient compression, and to interfere as little as possible with the mechanism of the breathing apparatus in order to give the patient his best chance of com-

peting in a world from which he has been absent from one to many years. He will be useful to himself and others in proportion to the efficiency of his breathing apparatus. This does not mean that adequate surgery should not be done, but on the other hand we are not justified in permanently destroying the function of such an important organ as the diaphragm without having proven to ourselves our honest right to do so. This is accomplished by first interrupting the nerve temporarily and observing the results obtained, then deciding, after regeneration has occurred, what the next step shall be—nothing, rephraxis or severance. Keeping before us the vision of our patient during the years to come after he has left us, we may deem it wise to crush the phrenic nerve two or three times, allowing an interval between each phraxis to re-establish muscular tone of the diaphragm. As has been aptly said, the victory is not in removing or destroying the organ but in saving it—an organ which has been called the second most important muscle in the body.

## The Prevention and Control of Tuberculosis\*

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THE prevention and control of tuberculosis have, for over thirty years, been among the main objectives of the medical profession and of philanthropically inclined associations of laymen; and a vast machinery, virtually a "coast-to-coast" network, has been set up in order to attain the goal. That goal has not been reached as yet, but we are on the way and we are headed in the right direction.

In the year 1900 the mortality from tuberculosis throughout the country was 200 per 100,000 population; in 1935 the mortality was 53 per 100,000 population. This enormous reduction in the death rate was brought about by the crusade waged by the National Tuberculosis Association ever since its inception in 1904, and by the efforts of its children and its children's children, the various state,

county and municipal tuberculosis associations. These several bodies have worked in harmony, it being realized that in the last analysis results were to be obtained by individual efforts directed toward the individual case; necessitating the detail work to be done by the smaller localized units rather than by the national group, which should preferably initiate policies rather than deal in particularities.

Striking as has been the reduction in the mortality from tuberculosis, the fact still remains that at the present time there are 70,000 deaths annually from the disease in the United States, and that most of these deaths occur at the age of greatest productivity; namely, between twenty-five and forty. There must be over a million cases of tuberculosis in this country to-day. This is not a credit to our control and preventive measures, even though we can point with pride to betterment since the opening of the

\*Radio broadcast delivered in New Orleans, La. December 1, 1937, in connection with meeting of Southern Medical Association.

twentieth century.

At present there are about 95,000 beds in the United States for tuberculous patients, 15,000 of which are in general hospitals, the rest being in institutions designed solely for those suffering from tuberculosis. If 70,000 die annually of this disease, it is obvious that 95,000 beds are wholly insufficient to care for those in need of treatment. The reason is self-evident. In sanatoria for tuberculosis, the patient turn-over is very slow because tuberculosis is a disease in which time is a great factor in recovery. In the general hospital, caring for all types of medical and surgical ills, the patient remaining over a month is the exception. Either he is well enough to return home and continue treatment at the out-patient department, or he is dead. On the other hand, in tuberculosis many months are necessary in order to attain a condition of arrest sufficient for the patient to return to his home.

Prevention and control of tuberculosis must be secured along three lines of attack, i. e.:

1. Care of the far advanced case that gives no promise of recovery.
2. Care of the early and moderately advanced case that can recover if promptly treated.
3. Examination of all those that have been in contact with cases of tuberculosis.

If all three of these classes could be adequately handled, the tuberculosis problem would soon cease to exist. But the "if" looms large and at times seems insuperable.

As is well known to both the medical profession and the laity, the majority of cases of tuberculosis occur in the lower walks of life. When an individual is stricken with the disease, because of ignorance, unhygienic environment and inadequate housing quarters, he spreads the infection to all in close proximity. Also, because of ignorance and the dire necessity for continuing at work, he is apt to refrain from consulting a physician or going to a clinic until he simply cannot keep up any longer and his disease has reached the far advanced stage. It is important, of course, to try to save this type of patient, but it is still more important to try to protect those who have been exposed to his infection. How can this be done? The answer is simple, but its practical applica-

tion is difficult. The sick individual should be segregated from his family and this should be done with or without his consent. But how, it is asked, if the state and county sanatoria are full? I have two suggestions to offer:

1. The establishment of a tuberculosis unit at the various county homes. This usually can be done with little or no expense, for the equipment for the treatment is not costly. If the county physician does not feel that he is qualified to treat these patients, there should be no trouble in securing the services of one who is thoroughly competent. Sequestration in the tuberculosis unit of the county home should be for only such time as must elapse until space is available in the county or state tuberculosis sanatorium. The all-important thing is to remove an infecting individual from his family. Naturally, this would not apply to individuals in the higher economic brackets, where it is possible to give the patient a private room and bath in his home until satisfactory permanent arrangements can be made. I fully realize that this enforced segregation will cause much resentment in some quarters, but I do feel that we must deal with this matter as a public health measure and not be overruled by very natural sentimental reactions.

2. Failing a tuberculosis unit in the county home, the patient should be removed to the tuberculosis ward of a general hospital, more and more of which are coming into being, as witness whereof stand the 15,000 general hospital beds for tuberculosis among the 95,000 beds in this land. There is no reason why any large general hospital should not have a tuberculosis section, for the tuberculous individual is not "unclean" and, if certain simple precautions are taken, will not spread his infection. Furthermore, with the enormous strides in the surgery of tuberculosis, it would seem that many would be better off in a general hospital fully equipped to deal with all types of surgery than in a sanatorium not equipped for such procedures.

The early or moderately advanced case, with a good chance for recovery, should also be segregated from the family, but preferably should be sent to a sanatorium or to some place where proper methods of treatment given by experts may be applied. Here we

face a different problem: one where the welfare of the patient is paramount. It is in these cases that what is known as "collapse therapy" is employed; that is to say, treatment by placing the lung itself at rest either by collapsing it with air or by other procedures, such as crushing the nerve to the diaphragm thus paralyzing that muscle, or taking out sections of a number of ribs in order to cause the lung to fall inward and become permanently immobile: I say that it is in those cases with a good outlook for recovery that these various methods of treatment are of the greatest value. In 1933 it was reported by Dr. Bruce Douglass, Chairman of the Committee on Treatment of Tuberculosis of the National Tuberculosis Association, that of 29,211 patients in 112 institutions of 100 or more beds, 39 per cent of the patients had received, or were receiving, some form of collapse therapy. As evidence of the popularity of collapse therapy, some physicians are so enthusiastic over this form of treatment of tuberculosis that they believe in using it even in the mildest cases, keeping them in the hospital for a week or two and then letting them return to their homes, coming to the clinic for periodic injections of air. Opinions vary as to the justifiability of this procedure. I will not commit myself over the air. In any event, these people with a slight or only moderately advanced tuberculosis are those in whom treatment, of whatever sort, should be most enthusiastically instituted, as their life or their death depends upon how their cases are handled.

Most important of all, perhaps, because most numerous, are the contacts; those with whom the known tuberculous case, with bacilli in his sputum, has been closely associated. They have been exposed—they may, or may not, have been infected. Their condition must be known. This can be easily ascertained by the simple tuberculin skin test which, if positive, means not necessarily that the individual has active tuberculosis, unless he is under two or three years of age, but that at some time in his life a tuberculous *infection* has taken place which, however, must be sharply separated from tuberculous *disease*. Certainly over fifty per cent of adults will react positively to tuberculin, but only a small portion of them will really

have the disease, tuberculosis. In all individuals, whether children or adults, that react positively, x-rays of the lungs should be made and interpreted by one qualified to do so. By this method and by this method only, tuberculin test reinforced by x-rays in positive reactors, will the truly minimal cases of tuberculosis be discovered and proper treatment instituted at the proper time.

The question of tuberculosis prevention and control is one that is of importance to society as a whole. The disease is not contagious like scarlet fever and measles, but it is communicable and must still be recognized as one of the major scourges of mankind. No one, high or low, is immune. Being a communicable disease, the cause of which is definitely known and the manner of propagation of which is well understood, its prevention and control depend upon the energy, intelligence and enthusiasm of every state and community. We are now in the midst of a very intensive campaign, sponsored by the Public Health Service, against syphilis. Why should not an equally popularized campaign be waged against tuberculosis? When we look back thirty years and see the death-rate lessened seventy-five per cent, can we doubt that with national, state and county enthusiasm thoroughly aroused, this remaining twenty-five per cent will be still further reduced and eventually eliminated? The time is coming, and is not far distant, in my opinion, when tuberculosis will become, as typhoid fever now is, a disease to be ashamed of because it will betoken gross carelessness in the face of exact knowledge. To be sure, we have as yet, no preventive for tuberculosis comparable to typhoid vaccine against typhoid fever; but we have scientific information concerning tuberculosis, widely and freely disseminated; we have the National Tuberculosis Association and its offspring in every state in the Union; we have resources and we have the will to win. Let us resist the challenge of the advancing hosts of tubercle bacilli with an advancing host of our own, well-versed in strategy and tactics, well-armed, well-provisioned; and let us say to these wretched parasites that feed and thrive upon our human tissues the same words that the French thundered forth so successfully at Verdun: "They shall not pass!"

## Benign Spontaneous Pneumothorax

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**B**ENIGN spontaneous pneumothorax occurs much more frequently than is recognized.

This is proven by the number of cases reported where routine fluoroscopy or stereoscopic chest roentgenograms revealed the condition existent, even bi-laterally, in which cases the patients felt perfectly well and would admit slight or vague chest discomfort only after detailed questioning. It is also suggested in the group of patients who develop a spontaneous pneumothorax and who give a history of similar attacks in the past when such diagnoses as pleurisy, intercostal neuralgia, and strained muscle, have been made.

When we consider the little attention that is given this interesting condition, the large number of cases reported by independent observers in the past twenty years is astonishing. An excellent discussion of this subject, with a review of the literature, by J. L. Wilson<sup>1</sup> should be read by those who wish to investigate this condition in greater detail.

In this paper we shall briefly summarize eight cases seen by us in the last three years and then discuss the various aspects of the condition superficially in the hope that it may be kept in mind as a diagnostic possibility in a healthy individual complaining of mild or vague chest symptoms, and to echo the opinion of the numerous observers that it is probably a matter of every day occurrence and is frequently overlooked and misdiagnosed.

### *Summary of Cases Here Reported*

In two cases the diagnosis was made only because the frequency of the condition was kept in mind and because, with very few physical signs present, fluoroscopy or stereoscopic chest roentgenograms were resorted to. In one case, x-ray on deep expiration was necessary to prove beyond doubt the existence of pneumothorax.

Four of the cases were recurrent; one had four attacks, three on the left side and one on the right; one recurred eighteen times, on

one side or the other, and one attack was simultaneously bi-lateral.

Three of the patients had benign apical fibrosis which was interpreted as tuberculosis, but which was only indirectly responsible in that the fibrosis produced the condition of incomplete obstruction conducive to the formation of areas of localized emphysema and emphysematous bullae (2 and 3 as explained below).

Six of the eight cases occurred after some physical exertion, such as sneezing, reaching to a high shelf, lifting heavy objects, etc., but two were insidious in onset and no strain could be elicited.

None of the cases developed an appreciable amount of fluid, although three showed a small amount in the costo-phrenic sinus. All re-expanded within two months, one within two weeks. In two there were projections on the x-ray film from the apical visceral pleura suggestive of ruptured bullae.

All eight patients were young, tall, thin adult males from sixteen to thirty years of age. There was no treatment necessary other than bed rest.

### *Etiology*

Numerous fatal cases have been reported where rupture of emphysematous blebs were demonstrated at autopsy. Un-ruptured sub-pleural blebs have been amply demonstrated at autopsy where death was caused by some unrelated disease. In the benign form of spontaneous pneumothorax the patient invariably recovers promptly so that no such study is available, but it is presumptively evident that ruptured sub-pleural vesicles are frequently its basis.

Ruptured sub-pleural vesicles rarely complicate generalized emphysema, but their formation is favored by fibrosis from whatever cause. Partial obstruction of the bronchi or bronchioles favor the easy entrance and comparatively difficult egress of air, leading to the formation of localized emphysematous areas, which if sub-pleural may rup-

ture with or without exertion<sup>2, 3</sup>. This is particularly so if the blebs are situated apically where the pleural pressure is considered to be more negative<sup>4</sup>. A few autopsy reports have proven the sub-pleural vesicles to be congenital lung cysts<sup>5</sup>, but regardless of the cause, the mechanism of collapse following rupture is identical.

The degree of collapse and the severity of symptoms seem to depend on the size of the rent and whether or not they are valvular in type. The rate of re-expansion also depends on the presence or absence of a valve action. Cases are on record which have existed for several years. These are of the valvular type.

The reason for this condition occurring much more frequently in young, adult, tall, thin males has been explained by J. S. Wilson<sup>1</sup>, whom I quote: "Between the end of the growth period and the loss of pulmonary elasticity accompanying the later decades of life, the lungs are at the greatest stretch. The predominantly diaphragmatic type of breathing and the low position of the diaphragm in the tall, lean type of young man concentrates the tension on the lung apices favoring both vesicle formation and rupture."

Although approximately 10 per cent of tuberculosis patients die as a result of spontaneous pneumothorax, the benign form which occurs in the apparently healthy person is an entirely different condition and with this understanding a patient may be saved months of invalidism, institutional or otherwise.

#### *Symptoms*

The symptoms vary in direct proportion to the degree of collapse and the displacement of mediastinal structures and trachea. The onset of symptoms is usually gradual and mild. One case in our series had no symptoms whatever referable to this chest. X-ray was taken because of a strong family history of tuberculosis.

As a rule the patient is ambulatory and complains of pain in the chest, slight dyspnea, a peculiar clicking feeling on the affected side and inability to take a satisfactorily long breath. If the collapse is complete with

displacement of the mediastinum, the symptom complex is anginal in character, particularly if the left lung is involved; immediately after exertion there is sudden severe precordial pain, dyspnea, cyanosis, pain radiating down one or both arms, and collapse. Pain may be referred to the abdomen and there are cases reported where abdominal section had been performed with the mistaken diagnosis of an abdominal catastrophe.

#### *Physical Signs*

In minimal apical collapse, there are no physical signs; as the collapse becomes more complete the vocal fremitus and breath sounds become more distant and finally are absent. These are usually the only signs present. Generally there is no appreciable difference in percussion note, none being elicited in our series even with the apex beat to the right of the sternum with marked tracheal displacement. If there is extensive collapse, the affected side is immobile and percussion note is resonant to the extreme base with no shift on respiration. As pointed out by J. L. Wilson, the secondary signs so often listed in the textbooks are invariably absent.

#### *Treatment*

As a rule no treatment is indicated other than bed rest until the expansion is complete. It was unnecessary in any of our cases to remove air, and the same seems to be generally true. However, in the presence of marked dyspnea and mediastinal shift, air should be removed either by inserting and tying in place a fairly large bore needle to keep the tension at atmospheric pressure, or removing it in small amounts with a pneumothorax machine and controlling the pressure with the manometer.

Such measures as sedatives need not be discussed in any detail. If the patient is uncomfortable it is well to subdue his anxiety and nervousness with sedatives.

The recurrent type deserves special comment. Theoretically at least it seems logical that some measure should be employed to promote permanent approximation of the visceral and parietal layers of pleura. This

has been suggested and tried by various observers with success. Such substances as gominal, mineral oil, the whole blood of the patient, and 30 per cent glucose solution have been used, and they are certainly not without merit. At least, under aseptic precautions, they should not result in any harm to the patient.

#### *Prognosis*

The tuberculin test and stereoscopic roentgenograms will rule out tuberculosis in the majority of cases. In this large group the prognosis is very favorable. The rare complicating hemo-pneumothorax or extensive bilateral, simultaneous, spontaneous pneumothorax may cause death, but such reports are rare in the literature.

#### *Summary*

Spontaneous pneumothorax (excluding the type found as a terminal event in pulmonary tuberculosis) is usually benign in onset course and prognosis.

It is a far more frequent accident than is

generally realized and is frequently discovered in routine chest roentgenograms such as are being taken in industry and at educational centers today.

Fluoroscopy or roentgenography should be considered in all young men presenting themselves with a complaint of pain in the chest, with or without physical signs, and with or without dyspnea, or the more severe anginal symptoms.

Tuberculosis may cause spontaneous pneumothorax indirectly through scar retraction without the specific infection being active, in which case prolonged inactivity or hospitalization is not to be considered.

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## Tuberculin Tests as a Prognostic Measure in Tuberculosis

### (Preliminary Report)

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#### "PRONOUNCED Sensitiveness to Tuberculin

is an Advantage to its Possessor whether he has Latent or Clinically evident Disease": Watson<sup>1</sup>. Further, that such pronounced reactions in extra-pulmonary surgical tuberculosis show little tendency for these localized lesions to become generalized.

Since this publication last March I made some preliminary study checking Watson's theory and am of the opinion that we may use tuberculin test not only to determine the presence of infection in an organism and through this, as reported by Kovnat<sup>2</sup>, case finding; but that further use should be made of the test by a study of the degree of sensitiveness.

At the round table conference, Veterans

Administration Tuberculosis Physicians, June 1st last, held in connection with the meeting of the National Tuberculosis Association, Milwaukee, I asked Dr. Long, retiring President of the Association, to give his opinion of Watson's publication. I quote his reply: "Excessively strong tuberculin reactions occur chiefly under the following conditions: (a) in healthy people, including children, who are in constant contact, receiving frequent small doses of bacilli, and whose defensive powers are capable of handling these repeated small infections; (b) in recent first infections in childhood:—it is now recognized that if infection is not repeated, sensitivity wanes after a few months." It, therefore, seemed to me that Dr. Long agrees with

Watson as far as he goes<sup>3</sup>.

By this method we may measure the defense powers of the organism to the infection. Rhoads states: "Immunity is a strictly quantitative phenomenon." Then how important to measure this quantity, from a prognostic as well as a treatment view point.

I have been giving whole families these tests where a member is or has been an open case of tuberculosis. I have used the Mantoux test with O. T. 1/100, recording the name, age, date, relevant history, sputum findings, and result of test. If the reaction is a plus one with definite history of close and continuous contact, I start measures to raise the resistance at once.

A case in question: a child seven years old, in close contact with an aunt, who has active tuberculosis, shows a Mantoux plus one. There is no temperature or gross physical evidence of disease except some enlarged cervical glands and broadened area of dullness interscapular as reported in my recent article in this journal, noted by auscultatory percussion<sup>5</sup>.

Relative rest, tonics and sun-shine—via a sand box, was followed by nine pounds gain in weight, marked increase appetite, strength and better general appearance at the end of ten months when the Mantoux is plus three.

At the same time the mother who showed a plus four, continued her usual duties as house keeper in this home, maintaining her excellent condition, with no x-ray or physical evidence of disease.

To me the plus one in the child showed low defense powers and called for treatment; while the mother's plus four showed the opposite.

The first question asked after a diagnosis of tuberculosis is made concerning the prognosis. I have always refrained from answering this question because of the unknown factors: the dose of infection, the virulence of the infection, and the individual defence

powers<sup>6</sup>. It seems that Watson has given us a method to measure the last of these unknown factors, allowing some vision into the future. Among those I have tested are eight formerly active cases with the disease arrested or apparently cured at this time all of them working full time. Each of these showed strong tuberculin reactions. All recently active cases with positive sputas showed on the average a weak tuberculin reaction.

One girl of seventeen whose disease became arrested early in 1937 is now pregnant with a plus one reaction, a significant condition calling for close observation before and after delivery. A study of reactions, under these conditions, may help determine the advisability for interference in the future.

One, a childhood type of the disease with some toxicity and a definite peritracheal conglomerate tubercle with multiple calcareous deposits, as shown by x-ray, has a Mantoux plus one. Her three children show negative reactions.

This study has given me a faith in the use of tuberculin tests as a guide in the prognosis and treatment of the tuberculous.

I will diligently continue my studies along this line and hope to make further report of my studies at some future date. In the meantime I hope others will check on Watson's theory and report their findings.

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#### — FOR A BIRTHDAY GIFT —

Why not recommend a complete physical examination?

— Keep Tuberculosis in MIND! —

## Tuberculosis Among Negroes

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AT LAST tuberculosis among the Negroes is at the bar of public attention. Because of the enormity of the disease on the one hand, and the easy transmissibility on the other, the attention of our Southern States has been called to this ever present menace.

This mass murderer has been taking its toll since the days before Ovid (43 B. C. - 18 A. D.), who in one of his fables wrote "A dire infection had once infected the Latin—air, and the pale bodies were deformed by a consumption that dried up the blood." Thus, centuries ago Ovid had observed the ravages of consumption.

The statistics show that from this disease the mortality rate in the Negro, is 3 times greater than in the white race.

The death rate for Georgia in 1936—Colored, 96.3; White, 33.3.

With such a high mortality rate in the Negro, there comes a challenge to those in control of the tuberculosis program in this area.

I. The challenge is to those in control of the program of health education, to employ people of the Negro group to teach this vital subject to the underprivileged Negroes. You will find that Negroes can get the subject over to Negroes in a way they will understand.

Viz: A tuberculosis worker (white) went to a certain neighborhood in a city in Georgia to inquire after John Jones, a tuberculous patient. She inquired of a group of Negroes in that neighborhood as to the whereabouts of John Jones. One Negro looked afar off, scratched his head and said, "John Jones, John Jones, John Jones! I don't know where he lives." The Colored school teacher came along about this time, and the white tuberculosis worker asked her if she could get the desired information. This Colored teacher approached this same group of Negroes and asked if anyone knew the whereabouts of John Jones. She stated that this lady wanted to help him. The very Negro, who just a few minutes previous had spoken to the white worker, said, "Oh! You talking about John Jones, he lives next door."

Here health education would have dispelled much of the fear and misgivings in the Negro group in the community. Health education would teach Negroes to cooperate with those who are trying to help them. This information can be most effectively disseminated by Negro health education workers. They move in every phase of Negro life, from the front door to the kitchen—from the Boulevard to the alley.

II. The second challenge is to those in control of the local Tuberculosis Control Programs.

Here again Negro doctors and nurses should be trained to take care of the Negro Tuberculosis Program, including Clinics and Sanatoria. There should be public health nurses to do the follow-up work. Well established clinics should be maintained with a trained staff of Negro physicians to diagnose and administer the treatment, because of the present shortage of beds in State Sanatoria.

The compression treatment is a wonderful aid in the fight on tuberculosis. Pneumothorax has worked wonders for those who must wait to be admitted to the Sanatorium, and it often cuts short the patient's stay in the Sanatorium. Pneumothorax, in trained hands, helps the ambulatory cases to recover earlier. This results in a great saving to the taxpayer. To give this treatment, it is necessary to have access to an X-ray and Fluoroscope. The earlier the diseased lung is collapsed, the better for both the patient and those with whom he comes in contact. The sooner collapse is attained, the earlier the open case is closed.

In the Negro Clinic of the Atlanta Tuberculosis Association spectacular improvement has been obtained in those cases in which we were able to induce a successful collapse. The sputum becomes free of tubercle bacilli, the cough stops, the temperature returns to normal, they put on weight and clinically look as though they had never been ill. I made a report of a study of forty-eight cases of Pneumothorax in this clinic, which was published in *Diseases of the Chest* in December 1936,

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MARCH

which showed that even in those cases where we could not get a satisfactory collapse, there was marked improvement in the general health. The response to treatment of the Negro patients in this Clinic has been astounding. The case load in this Clinic has grown 22 per cent since Negro physicians took over the work.

If Negro physicians, in a given community, are not trained to do modern work in tuberculosis, then scholarships or Fellowships should be provided to train them. For those who cannot leave their homes, for various reasons, and yet show promise; I unhesitatingly recommend a teaching clinic, both in diagnosis and x-ray interpretation. This can be done to the advantage of all concerned. They should be appointed to work in all Clinics and Sanatoria where Negro patients are treated. This would be working with the Negro and not working for him.

III. The third challenge is to find the contact and then locate all possible open cases. Find, if possible, where the contact was made. Ninety per cent of all the cases that we see in the Negro clinic of Atlanta are either moderately advanced, or far advanced cases. Very rarely do we see the minimal lesion.

We can change this picture through an intensified course in health education in the schools and colleges. For here is where we must lay emphasis, if we are to check, or erase this scourge.

Health education in our schools and colleges is going to be our first line of defense in our future attack upon this disease. An Orchid to the National Tuberculosis Association for its fine leadership in this direction! In Georgia, through the cooperation of the National Tuberculosis Association, skin testing has been carried on in the following colleges: Agnes Scott, Atlanta School of Social Work, Clark University, Emory University, Gammon Theological Seminary, Morehouse College, Morris Brown College and Spelman College.

SUMMARY OF TUBERCULIN TESTING  
OCTOBER, 1936

College	Tested	Male	Female	Positive Reactors
Agnes Scott	184	0	184	43 or 24%
Atl. School of Social Work	43	15	28	34 or 80%

College	Tested	Male	Female	Positive Reactors
Clark	116	48	68	51 or 44%
Emory (Freshmen)	153	151	2	38 or 25%
(Medical)	74	67	7	38 or 51%
Gammon	44	40	4	28 or 61%
Morehouse	123	123	0	64 or 52%
Morris Brown	155	56	99	78 or 50%
Spelman	300	0	300	131 or 44%
<b>TOTAL</b>	<b>1192</b>	<b>500</b>	<b>692</b>	<b>505</b>

SUMMARY OF X-RAY FINDINGS  
DECEMBER, 1936

College	X-Rays	X-Rayed	Pos.	Sus.	Obs.
Agnes Scott	43	43	1	0	8
Atl. School of Social Work	34	21 or 62%	1	2	3
Clark	51	15 or 29%	0	2	3
Emory (Freshmen)	38	29 or 76%	0	0	10
(Medical)	38	(x-rays not made yet)			
Gammon	28	19 or 68%	0	1	8
Morehouse	64	48 or 75%	1	1	13
Morris Brown	78	45 or 57%	0	0	2
Spelman	131	114 or 89%	3	8	18
<b>TOTAL</b>	<b>505</b>	<b>334</b>	<b>6</b>	<b>14</b>	<b>65</b>

This group of students because of this experience will become health minded. Since they are to be our future leaders, health education will have a big boost. They will be our new apostles of Health Education.

Our Tuberculosis Program among Negroes will only succeed when we don't hear the disease with a stethoscope, but rather see it by x-ray. Then only will early diagnosis become a living reality. To secure this happy result we will have to obtain the confidence of the Negro. Many Negroes are secretive about diseases which they have. Viz: One day, while examining a young Negro woman, I asked her of what did your father die? She balked. She finally admitted he had a persistent cough and fever, but said, "I don't know what he died with, but it wasn't anything serious." She was trying to hide the fact that her father had died of Pulmonary Tuberculosis—and that she had been exposed. She did not want any one to think that she had tuberculosis.

There in this endless chain of infection is one of its strongest links. Here again, we must be frank and explain to the Negro people that all who are now suffering with tuberculosis were once only contacts. Explain to them that it is important to see a com-

petent physician or to go to a clinic for a skin test, and if positive—an x-ray examination. Explain to them that the disease is infectious.

Long before the Christian Era, men sensed the danger of infection in tuberculosis, even though they had not discovered the causative germ. They feared this disease because it was infectious. Just visit the average home of the Negro tuberculous patient today—flies in abundance, no screens, children playing on the floor, bed, and lying around eating small bits of the patient's food with a common drinking glass for all. This home is crowded—adults and children. What a massive dose of infection is being fed the children. Not only the children but the adults also! If the contact is broken before the dose of infection is so massive nature can't take care of it, disease usually does not follow. Nature will come to the rescue and wall in the tuberculosis germs.

The earlier the treatment is started in pulmonary tuberculosis the better chance the patient has to be benefited. When the late symptoms develop, indicating far-advanced disease, the chance of curing that patient has been reduced materially. In many of these far advanced cases little can be done. It is in these cases that superstition has played so large a part. Far too many Negroes still believe in the conjurer and that they have some magic power. Viz:

I had a case of tuberculosis under my care in a family whose cooperation I could not get. Being anxious to know why they would not cooperate with me, I asked one member of the family and he said, "Doctor you are all right, but you just don't understand. You can't reach her case. Your kind of treatment is against her. So we decided to get you some help." I was now eager to know who my new helper was. I asked his name. You don't know him, was the reply. He lives out in the country and works with roots. He says that Mary has been hurt, he found the thing that someone who wanted to hurt her had planted under the front doorstep. This type of ignorance is the greatest ally of death. Here health education in the young children will help relieve this situation. They will be the adults of tomorrow.

The members of a family were told that

their sister, Martha, had tuberculosis. They were forbidden to eat, drink or handle articles used by this sick sister. They were told not to sleep in the same room with the patient. In order to assure Martha that she was all right and that no one believed she had tuberculosis, they hugged her, kissed her, drank from her water glass and even slept in the bed with her. Does this picture seem overdrawn? Well, it is not. It is true. What happened? Not only did Martha die, but every member of that family died from tuberculosis. Thus through health education, foolish sentiment, false pride and conjuration must give way to truth, to science and to fact. We must speak to the Negro in terms he will understand. Let us not say he has a nervous breakdown, that she has gone into a decline or that she is in failing health. These terms are only soothing syrup, which has the tendency to lull into a sense of security those who stand upon the brink of the abyss below. Let us be frank and tell them they have tuberculosis—or better still consumption. This may produce a temporary shock, but it will stimulate proper action with the realization of danger present.

Let me summarize briefly:

I. The Negro is conscious of his high death rate from tuberculosis and desires to help reduce it.

II. A higher economic standard of living together with health education are the two most valuable means for reducing the tuberculosis morbidity and mortality among Negroes.

III. Well trained Negro physicians and nurses are vital needs in the Control Program of tuberculosis in the field, Clinics and Sanatoria.

IV. The Negro desires to be worked with, and not for, on all these control programs.

V. More beds in the State and County Sanatoria should be provided. Let me close by quoting from the paper of Dr. Lewis J. Moorman of Oklahoma City, Oklahoma, "On Science, Sense and Sentiment," in the dark Kingdom of Disease.

He said, "We have now arrived at the point where science and sense need the weight of sentiment. Sentiment demands that we pay our debt to the World's most loyal and friendly race. Fortunately when we consider the

nature and magnitude of the debt, we are convinced that even unbridled response to sentiment could not possibly carry us beyond the bounds of justice. The faithful denizens of this ebony skinned race have tilled our soil, followed our flocks, garnered our grain, cured our viands, and performed all the menial tasks which insure the amenities of life. They have cooked our food, mothered our children, and nursed our sick. They have colored our philosophy, sharpened our wits and mellowed our hearts; they have built our fires, turned down our beds, and comfortably

launched our dreamland journeys. Finally, climaxing the drudgery of the day, they have often transfixed us in the ethereal mystery of night with the strange melody of their spirituals. Though they have been our slaves, they have served with devotion. They have revered our loved ones and mourned our dead, I submit the following question in response to all this, Can we do less than vouchsafe to our brothers in color reasonable protection against disease, suffering and death, and the best possible chance to achieve the fullness of life?"

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## Incidence of Tuberculosis Among the Personnel of the College of Medicine, University of Cincinnati, and the Cincinnati General Hospital\*

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THE incidence of tuberculous disease among the internes, medical students, nurses and employees of the College of Medicine of the University of Cincinnati and the Cincinnati General Hospital has long been a matter of interest. Various estimates have been given of this item but no exact studies have been made. It is the purpose of this report to give as far as possible the incidence of all forms of tuberculosis occurring among the groups listed and to compare it with similar data from other institutions. This study concerns itself with the time between July 1, 1931 and July 2, 1935, a period of four years. The data were collected from the records of the respective offices of the Dean of the College of Medicine, the Superintendent of the General Hospital, the Supervisor of Nurses, and the Personnel Physician.

There are several important factors affecting a study of this kind. Among these are the stability of the population studied, the criteria used in the diagnosis of tuberculosis, and the case finding methods used. The population group studied in this report was

divided into six groups as follows: Doctors, graduate nurses, student nurses, medical students, affiliate nurses, and employees. The first four represent fairly stable groups; the last two are somewhat variable. That is, not only was the number of employees in any one month found to vary, but the membership of the group changed. The same situation was found to be true among the affiliate nurses. In this study the number of employees as of July 1 was taken for one year. Likewise, affiliate nurses remaining at the hospital for six months or longer were counted as for one year.

These arbitrary divisions of the population into groups may seem superfluous but they were made in an attempt to form classes whose attributes in respect to age and occupation, and the case finding methods used, were similar. The affiliate nurses, mostly students, were grouped apart from the others mainly because no program for case finding among them is exercised by this institution.

In order for a case to be recorded as tuberculosis, the diagnosis had to be based on a study of the affected tissues, the finding of the tubercle bacillus, or an x-ray plate showing changes generally accepted to be due to tuberculosis. Pleural effusions were as-

\*Reprinted from The Journal of Medicine—Vol. XVIII, No. 11, January, 1938.

\*\*Formerly Instructor in Medicine and Personnel Physician, College of Medicine, University of Cincinnati, and the Cincinnati General Hospital.

## DISEASES OF THE CHEST

TABLE I

*Number of Persons in Each Group, Distribution of the Number of Cases of All Forms of Tuberculosis, and the Percentage Incidence by Groups.*

	1931-32**			1932-33			1933-34			1934-35			Total		
	No.	Cases	%	No.	Cases	%	No.	Cases	%	No.	Cases	%	No.	Cases	%
Doctors	68	2	2.9	79	—	—	80	2	2.5	88	3	3.4	315	7	2.2
Student Nurses	110	5	4.5	115	4	3.4	114	3	2.6	95	2	2.1	434	14	3.2
Graduate Nurses	101	3	2.9	106	1	0.9	115	5	4.3	118	4	3.3	440	13	2.9
Affiliate Nurses	—	—	—	—	—	—	70	2*	2.8	75	3	4.0	145	5	3.4
Medical Students	—	—	—	—	—	—	302	1	0.3	290	3	1.0	592	4	0.7
Employees	—	—	—	—	—	—	501	2	0.4	512	2	0.4	1,013	4	0.4
Total with Average Per Cent	279	10	3.4	300	5	1.4	1,182	15	2.2	1,178	17	2.4	2,939	47	2.1

\*\*Year beginning and ending July 1.

\*Here only three months when discovered.

signed to tuberculosis regardless of whether or not the tubercle bacillus was found. Since 1931 all student nurses of the School of Nursing and Health of the University of Cincinnati have had an x-ray plate made of the chest each year. In March, 1933, the same procedure was instituted among the interns and graduate nurses and has been in effect since then. The other groups, with a few exceptions, had x-ray plates made when such were indicated. From such a difference of case finding methods alone, therefore, a discrepancy in the incidence of the disease might be expected to arise. Table I shows the numerical size of each group during the years studied, the distribution of the number of cases of all forms of tuberculosis, and the percentage incidence by groups. No data concerning the medical students, affiliate nurses, and employees were available for the first two years of the study.

A study of this table reveals that the annual incidence of the disease in student nurses has decreased each year. This trend and the degree of difference between 1931-32 and 1934-35 is statistically significant, being eight times its own probable error. This should not be taken to mean that this trend will not change its direction, but merely that it exists, did not arise by chance alone, and is at present significant.

Table II shows a comparison of the average annual incidence of tuberculosis among student nurses at the Cincinnati General Hospital (July 1, 1931 to July 2, 1935), the University of California Hospital<sup>1</sup> (1922-1931), and Undergraduate Women Students at the University of Minnesota<sup>2</sup> (1932-1933). Case finding methods used at these three institutions are similar and the members of each group are approximately of the same age and social status, and probably mainly of the same race. It follows, therefore, that in these respects they are comparable. It will be noted that the incidence of tuberculosis in student nurses at the Cincinnati General Hospital is 5.4 times greater than among women students at the University of Minnesota and 1.4 greater than among student nurses at the University of California Hospital. This would seem to be a pertinent finding. The one obvious difference between the nursing service at the University of California Hospital and the Cincinnati General Hospital is that there is no tuberculosis service at the former. Whether or not this would account for the difference in incidence is conjectural.

During the past ten years several hospitals have reported the incidence of tuberculosis among their student nurses. In Canada<sup>3</sup> the rate among students in training at general hospitals during the period 1930 to 1933 was 1.27 per hundred, or eight times greater than in normal school students of the same age and sex. Geer<sup>4</sup> reported an incidence of 5.5 per hundred from the Ancker Hospital in St. Paul. His study covered a period of two years. After the establishment in 1931 of an aseptic nursing technique for tuberculous patients, the incidence dropped to 1.6 per hundred.

TABLE II

*Average Annual Incidence Tuberculosis Among Nurses at Cincinnati General Hospital, University of California Hospital, and Women Students at University of Minnesota for Years as Indicated in Text.*

	Avg. No. Students Each Year	Average Annual Incidence Per 100
Cincinnati General Hospital	108	3.20
University of California Hospital	124	2.18
University of Minnesota	?	0.59

During the first two years of the study the average annual incidence per hundred among doctors and graduate nurses was 1.45 and 1.90 respectively, while during the last two it was 2.95 and 3.80. The increase in the last two years may have been due to more careful case finding by annual x-ray examination. However, these are relatively small groups studied for a short period of time. Table III shows the incidence of tuberculosis among physicians at the Cincinnati General Hospital (July 1, 1931 to July 2, 1935), and

TABLE III

*Incidence Clinical Tuberculosis Among Physicians at Cincinnati General and Fitzsimons General Hospital for Years as Indicated In Text.*

	Number of Physicians	Incidence Per 100
Cincinnati General Hospital	315	2.2
Fitzsimons General Hospital	227	1.7

the Fitzsimons General Hospital<sup>5</sup> (10 years—dates not given). These findings are comparable as to occupation and as to the methods used for the discovery of the disease, (case finding). The average age of each group is not known nor are the working conditions.

TABLE IV

*Incidence of Tuberculosis Among Medical Students of Cincinnati, Western Reserve, Johns Hopkins, and Undergraduate Men, University of Minnesota for Years as Indicated in Text.*

	Aver. Annual Enrollment	Annual Incidence Per 100
University of Cincinnati	296	0.70
Western Reserve	250	0.55
Johns Hopkins	250	0.80
University of Minnesota	?	0.33

Table IV shows the incidence of tuberculosis among medical students at the Universities of Cincinnati (1933-1934), Western Reserve (1923-1931), Johns Hopkins<sup>6</sup> (1926-1931), and among undergraduate men at the University of Minnesota<sup>7</sup> (1932-1933). At the University of Minnesota, students are given tuberculin tests and the positive reactors examined by means of x-ray. At the College of Medicine of the University of Cincinnati no definite program was in effect during the first year of the study. During the second year, x-ray plates of the chest were made on the entering class. If the Minnesota method had been used more cases may have been found. Nonetheless, the incidence rates among the three medical schools studied

were approximately twice that of the single undergraduate school.

TABLE V

*Average Annual Incidence of New Cases of Pulmonary Tuberculosis Among Employees of Cincinnati General Hospital and Metropolitan Life Insurance Company for Years as Indicated In Text.*

	Average Number of Employees	Annual Incidence Per 100
Cincinnati General Hospital	506	0.40
Metropolitan Life Ins. Co.	11,561	0.94

Table V shows the average annual incidence of new cases of *pulmonary tuberculosis* among employees at the General Hospital, Cincinnati (July 1, 1933 to July 2, 1935), and the Metropolitan Life Insurance Company (1927-1928). All ages and races, and both sexes are included. It does not include nurses at the General Hospital. The Metropolitan Life Insurance Company<sup>7</sup> examined with the fluoroscope or the x-ray, or both, the chest of each of the employees of the home office annually. Employees at the General Hospital have these examinations made only when such are indicated.

The average annual percentage incidence of tuberculosis among graduate nurses for the four year period of the study was 2.9. This rate is a little less than that for student nurses. No reports dealing with the incidence of the disease among graduate nurses as a group per se, could be found for comparison. The incidence rate among the affiliate nurses (mostly students) averaged 3.4 per cent annually for the two years studied. The higher rate in this group may be due to the fact that it was comparatively small and was studied for too short a period of time. Two of the cases in this group were discovered within three months after beginning their affiliation. Since they had not had x-ray plates made of the chest for some time, this would suggest the more frequent use of this procedure by their respective schools before permitting these girls to begin their affiliate studies.

#### Summary

The incidence of tuberculosis among the personnel of the College of Medicine of the University of Cincinnati and the Cincinnati General Hospital from July 1, 1931 to July 2, 1935, is presented.

A comparison of this incidence to that in

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other institutions is made. An average annual incidence of 3.2 per cent was found among the student nurses—a rate 5.4 times greater than among undergraduate women at the University of Minnesota, and 1.4 times greater than among student nurses at the University of California.

The average annual rate among medical students was 0.7 per cent. This was found to be approximately the same rate as at Western Reserve and Johns Hopkins Universities, but was two times greater than the rate among undergraduate men at the University of Minnesota.

The following average annual incidence rates per hundred for the other groups were found: affiliate nurses, 3.4; graduate nurses, 2.9; doctors, 2.2; and employees, 0.4.

#### Conclusion

The incidence of tuberculosis among doctors, nurses, and medical students at the University of Cincinnati and the Cincinnati

General Hospital seems to be somewhat higher than that among comparable groups at other institutions. It is most certainly higher than that of the general population. However, there is a downward trend in the case of student nurses that appears to be significant.

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## ORGANIZATION NEWS

#### OBITUARIES

##### DR. HARRY EDWARD SISKE, Glencliff, New Hampshire.

A Fellow of the American College of Chest Physicians died on November 2, 1937 at the Hitchcock Hospital, Hanover, New Hampshire. Burial services were held at Palmer, Massachusetts on November 5th. Dr. Siske was born at Manson, Massachusetts, May 10, 1877. He was a graduate of Manson Academy and of Tufts Medical School. Following his graduation he was employed at the New Hampshire State Hospital at Concord and at the Penal Institution, Providence, Rhode Island. He was roentgenologist at St. Joseph's Hospital at Providence and at the Memorial Hospital, Pawtucket, Rhode Island. At the time of his death he was assistant physician at the New Hampshire State Sanatorium, Glencliff, N. H.; in which capacity he served for the past eleven years. He was a member of the Craf-ton County and the New Hampshire State Medical Societies.—Robert B. Deming, M.D., Glencliff, N. H.

##### DR. WILLIAM THOMAS LITTLE, Paducah, Kentucky.

A Fellow of the American College of Chest Physicians died on February 8, 1938 at Paducah, Kentucky. He was born in 1884 and was graduated in medicine from the University of Louisville in

1907. He was a member of McCracken County Medical Society and of the Kentucky State Medical Society and limited his practice to chest diseases.

#### Kansas Medical Society Plans Survey of Tuberculosis Facilities in State

The committee on Control of Tuberculosis of the Kansas Medical Society is planning a survey of tuberculosis facilities in the state with the cooperation of the Kansas Tuberculosis and Health Association, the Kansas State Board of Health, and the State Tuberculosis Sanatorium at Norton.

The committee plans to make a study of the existing facilities in the State for private pneumothorax therapy and to encourage extension of these facilities so that many tuberculosis patients may be cared for without state hospitalization.

Upon the completion of the survey, a report and recommendations will be submitted to the Governor, the Board of Administration, and the Legislature.

#### Clinical Paper Reprinted

Dr. Ross K. Childerhose's paper on "Clinical Aspects of Pneumoconiosis" which was published in the November issue of "Diseases of the Chest" has been reprinted in the November issue of "Industrial Medicine."

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## Organization News

### Fellows Head State Tuberculosis Committees

Dr. M. Jay Flipse, Miami, Florida, a Fellow of the American College of Chest Physicians has been appointed as the chairman of the Tuberculosis and Health Committee of the Florida State Medical Society. Other Fellows of the American College of Chest Physicians who are serving on this committee are: Drs. William C. Blake, Tampa; and Duncan T. McEwan, Orlando, Florida.

Dr. Louie Limbaugh, Jacksonville, Florida, a Fellow of the American College of Chest Physicians has been appointed chairman of the Committee on Public Relations of the Duval County Medical Society. Dr. Limbaugh is also a member of the Committee on Medical Economics of the Florida State Medical Society.

Dr. Champ H. Holmes, Atlanta, Georgia; President-Elect of the American College of Chest Physicians has been appointed as a member of the Committee on Nominations for Directors of the National Tuberculosis Association.

### College Well Represented on Committee Assignments

The following Fellows of the American College of Chest Physicians have been appointed to serve on committees of the Georgia State Medical Society: Dr. C. C. Aven, Atlanta, Public Policy and Legislation; Dr. C. D. Welchel, Gainesville, Hospitals; Dr. W. W. Chrisman, Macon, Medical Economics; Dr. Wm. P. Harbin, Jr., Rome; and Dr. J. A. Refearn, Albany, Scientific Exhibit.

### SOCIETY NEWS

Dr. John F. Allen, Omaha, Nebraska; a Fellow of the American College of Chest Physicians, addressed the Montgomery County Medical Society, Emerson, Iowa. His subject was, "Diagnostic Procedures in Pulmonary Disease."

Dr. Moses Behrend, Philadelphia, Pa.; will be in charge of the new surgical unit of the Pennsylvania State Tuberculosis Sanatorium, now being constructed at Hamburg. This unit will also serve the other two state sanatoria, situated at Cresson and Mont Alto, Pa.

Dr. Orville H. Brown, Phoenix, Arizona; a Fellow of the American College of Chest Physicians, gave a paper before the St. Louis Medical Society, entitled, "Practical Bacterial Vaccines."

Dr. J. D. Riley, State Sanatorium, Arkansas; a Fellow of the American College of Chest Physicians, was a speaker at the meeting of the Arkansas County Medical Society, held at Stuttgart, on December 14th. Dr. Riley spoke on "The Diagnosis of Pulmonary Tuberculosis."

Dr. John F. Allen, Omaha, Nebraska; a Fellow of the American College of Chest Physicians, and President of the Nebraska Tuberculosis Association addressed an organization meeting of the York County Tuberculosis Society at the Hotel McCloud, York, Nebraska.

Dr. Louis Mark, Columbus, Ohio; a Fellow of the American College of Chest Physicians, gave a talk on "What the Layman should Know about Tuberculosis" before the Kiwanis Club at Delaware, Ohio.

Dr. Jerome R. Head, Chicago, Illinois, a Fellow of the American College of Chest Physicians will deliver a lecture on "Childhood Type of Tuberculosis" before nurses of the Edward Hines, Jr. Hospital, Hines, Illinois.

Dr. Chas. R. Gowen, Shreveport, Louisiana, a Fellow of the American College of Chest Physicians was on the program of the North East Texas Medical Society, held at Kilgore, Texas. The title of his paper was, "Differential Diagnosis in Unusual Chest Conditions."

Dr. Harry B. McCorkle, a Fellow of the American College of Chest Physicians, was recently installed as Vice President of the El Paso County Medical Society of Colorado.

Dr. Albert W. Hobby, Atlanta, Ga., a Fellow of the American College of Chest Physicians, addressed the Fulton County Medical Society January 20th on "Pneumoperitoneum as an Adjunct to the Treatment of Tuberculosis."

Dr. Jerome R. Head, a Fellow of the American College of Chest Physicians, addressed the nursing staff of the Edward Hines, Jr. Hospital, Hines, Illinois, on "Childhood Types of Tuberculosis" on February 8th.

At the 43rd annual session of the Sioux Valley Medical Association, January 19 and 20, Dr. J. Arthur Myers, professor of preventive medicine in the University of Minnesota, president of the National Tuberculosis Association, and a Fellow of the American College of Chest Physicians, spoke on "Controlling Tuberculosis in a Community" and held a medical clinic.

Dr. Marr Bisaillon, Assistant professor of medicine at University of Oregon Medical School and a Fellow of the American College of Chest Physicians addressed the Walla Walla Valley Medical Society, January 13th, at Grand Hotel, on the "Differential Diagnosis of Chest Diseases."

At the annual postcollegiate clinic assembly at Ohio State University, College of Medicine Dr. M. D. Miller, a Fellow of the American College of Chest Physicians, will give an address on March 5th on "Preventive Medicine in the Management of Tuberculosis."